

**B.Tech IN CIVIL ENGINEERING (BTCLEVI)****Term-End Examination****December, 2011****BICE-026: GEO-TECHNICAL ENGINEERING - I***Time : 3 hours**Maximum Marks : 70*

- Note :**
- (1) *All answers are to be written in English only*
  - (2) *Total Questions to be answered are seven.*
  - (3) *Non programmable calculator is allowed.*

1. Define Void Ratio, porosity, dry density, water content, saturated unit weight, Degree of saturation, submerged unit weight. 10
2. What is sieve analysis and for what type of soils it is performed ? Describe Dry sieve Analysis ? 3+7
3. (a) Define Darcy's Law and its validity. 5  
(b) Describe factors affecting permeability of soil. 5
4. (a) Discuss the factor affecting compaction of soil. 5  
(b) What is standard penetration Test ? Describe with neat sketch and discuss the corrections applied to N values. 5

5. (a) What is permeability of soil ? Define it. Why permeability is important for Geo-Technical investigation ? 5
- (b) Briefly describe the laboratory method of constant - Head Permeability Test for determination of co-efficient of permeability. 5
6. The falling head Permeability Test was conducted in laboratory on a soil sample of 50 mm diameter and 200 mm long. The head fell from 1.00 m to 0.30 m in 30 minutes. If the cross sectional area of the stand pipe was  $10 \text{ mm}^2$ , find the co-efficient of permeability. 10
7. (a) What is difference between compaction and consolidation of the soil ? 5
- (b) Describe merit and demerits of Triaxial Test. 5
8. Describe briefly Vane Shear Test to find undrained shear strength of soft clays in laboratory. Give two merits and two demerits of Shear Vane Test. 10
9. What are the types of slope failures ? Give the brief procedures for stability analysis by Swedish Circle Method. 4+6

10. Write short notes (*any two*)

5+5

- (a) Terzaghi's theory of Consolidation one dimensional.
  - (b) Factors influencing compaction.
  - (c) Compaction Curve and zero-air void line shown on compaction curve.
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